Climate Science Information for the ‘Resilience Ecosystem’

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Overview

1. Problems Summary
2. Introducing the FARG & Resilience Ecosystem
3. On audiences & objectives
4. Sharing climate projections & enhanced coordination across scales
5. A case for collaboration & co-investment

EO on Tackling the Climate Crisis at Home & Abroad

Section 211 — Climate Action Plans and Data and Information Products to Improve Adaptation and Increase Resilience

"...the Federal Geographic Data Committee, shall assess and provide to the Task Force a report on the potential development of a consolidated Federal geographic mapping service that can facilitate public access to climate-related information that will assist Federal, State, local, and Tribal governments in climate planning and resilience activities."

Problems Summary (see NCA4 for more details)

1. Humans are causing our world to warm at accelerating rate.
2. Resultant climate changes producing more frequent, severe, & longer-lasting extreme events with rising cost damages.
3. Climate-driven impacts cause cascading problems in our networked, highly interdependent built environments.

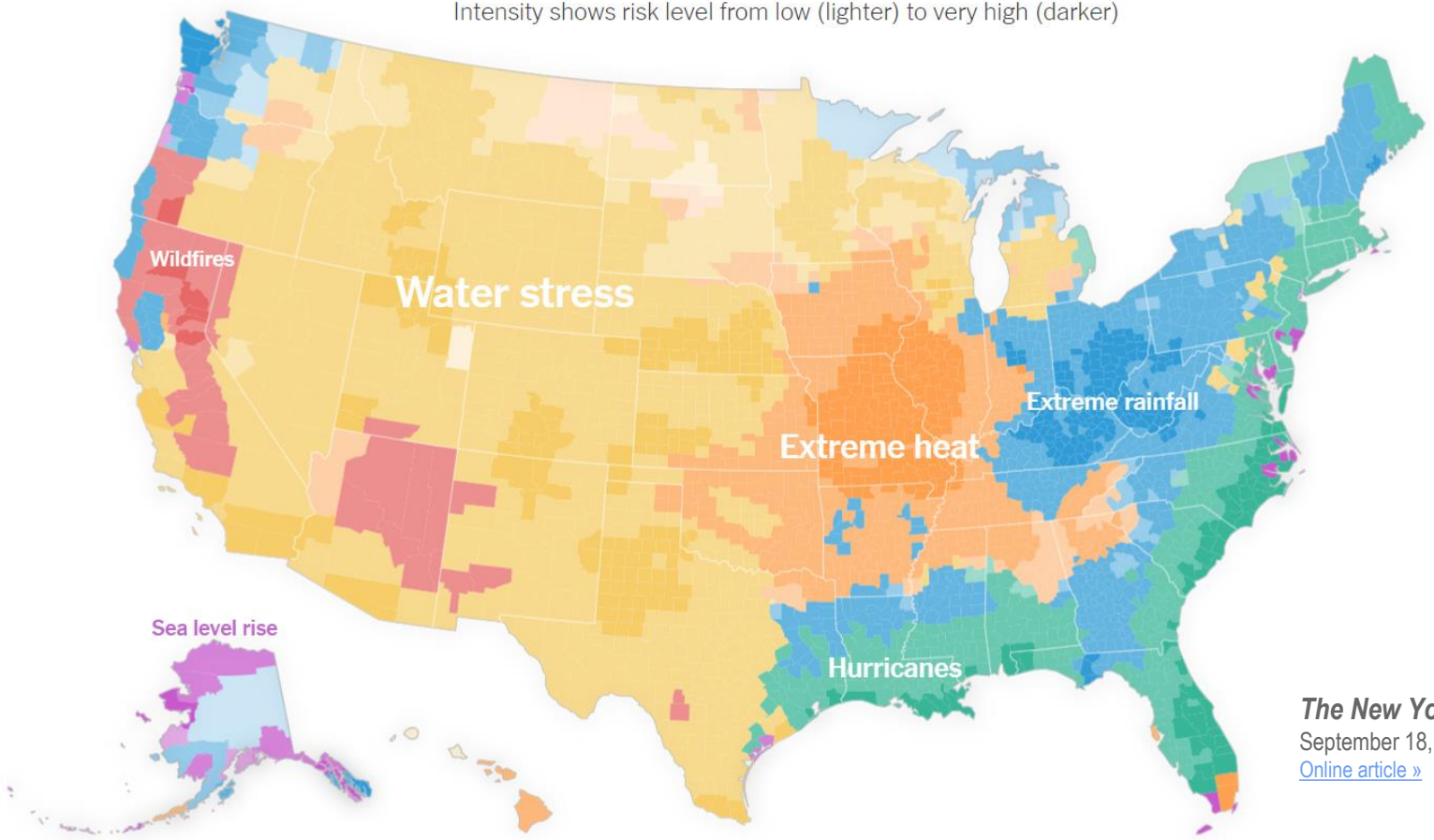
Problems Summary (continued)

4. More humans building, working, and living in harm's way — **poor, disadvantaged, & communities of color** are most vulnerable.
5. Resilience-building is local, so the need for services & funding is **massively concurrent** (>32,000 US communities).
6. Pace & scale of **climate impacts are outpacing our response**
7. Our 'default' competitive, siloed organizational approach hinders our efficiency and ability to **scale up and accelerate to meet demand.**

The New York Times

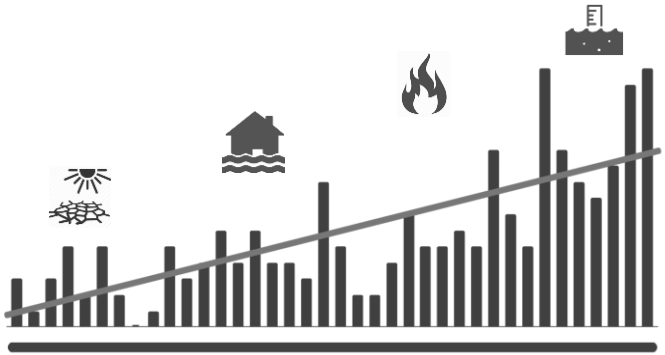
What to call climate change where you live

Intensity shows risk level from low (lighter) to very high (darker)



The New York Times
September 18, 2020
Online article »

GROWING
COMMUNITIES

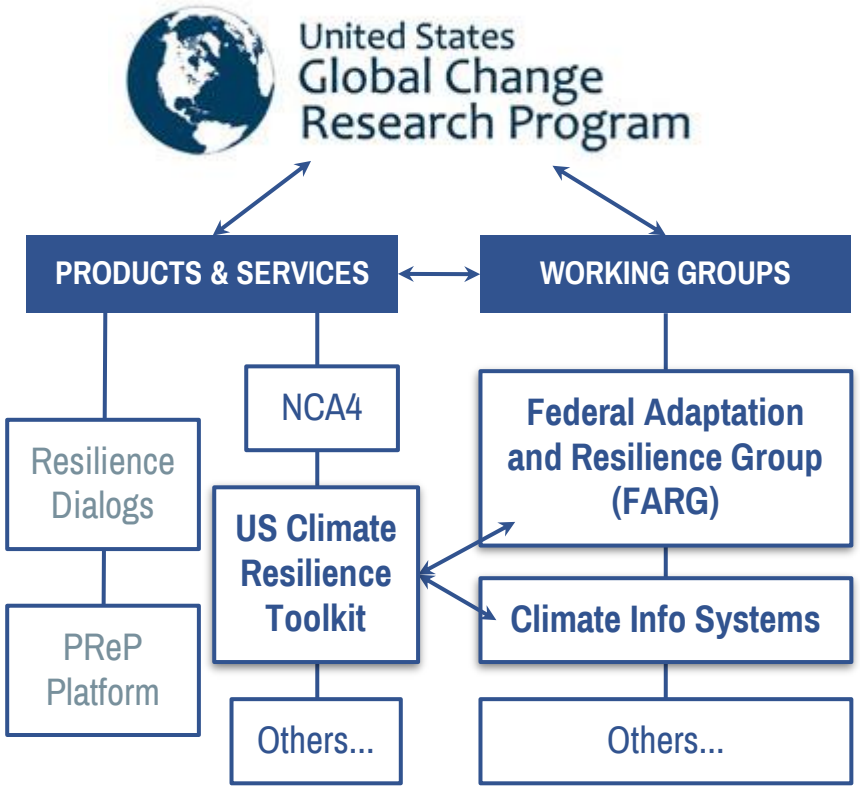


CLIMATE-DRIVEN
DISASTERS

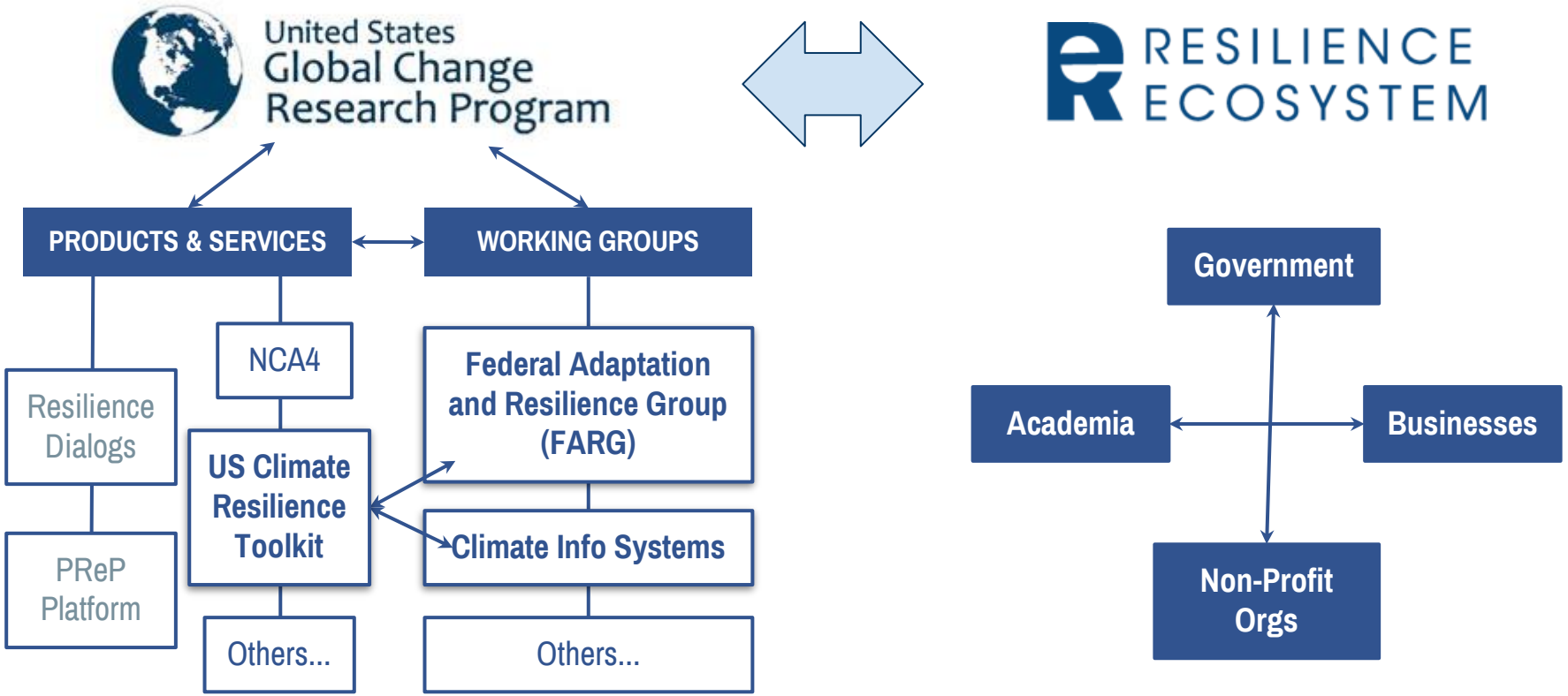
INCREASING
RISK

Introducing the FARG & Resilience Ecosystem

Introducing the FARG & the ‘Resilience Ecosystem’

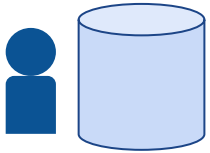


Introducing the FARG & the 'Resilience Ecosystem'



On Audiences & Objectives

FARG & Resilience Ecosystem support the value chain from science to services to taking action



Federal Science & Data Community

Provide research, data, modeling, & assessments of past & future climate

Cloud Host Service Providers

Offer big data hosting, computation, & public browse, formatting, access services

Designers of GIS & Data Analytics

Bring data & analysis tools from federal & local sources together in geospatial context

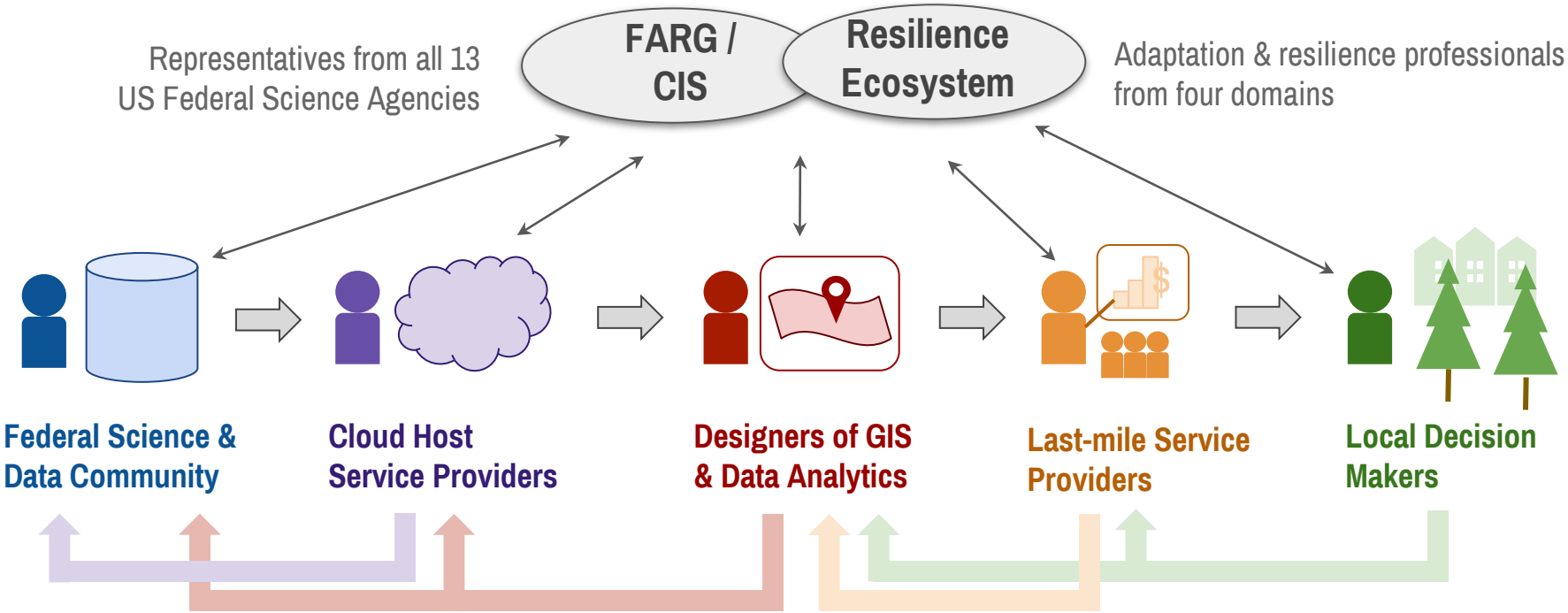
Last-mile Service Providers

Offer guidance and translation services to help communities & businesses plan & take action

Local Decision Makers

Responsible for local planning & action to protect people and property

FARG & Resilience Ecosystem support the value chain from science to services to taking action



The CRT's 5 'Steps to Resilience'

A co-production of knowledge process that synthesizes information from multiple sources

1 EXPLORE HAZARDS

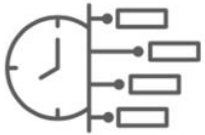
Identify & map exposure of all valued assets to climate-related hazards.

2 VULNERABILITY & RISK

Assess vulnerability & risk for all valued assets threatened by climate hazards. Rank most urgent threats to address.

3 OPTIONS

Brainstorm & list all options for reducing risks.

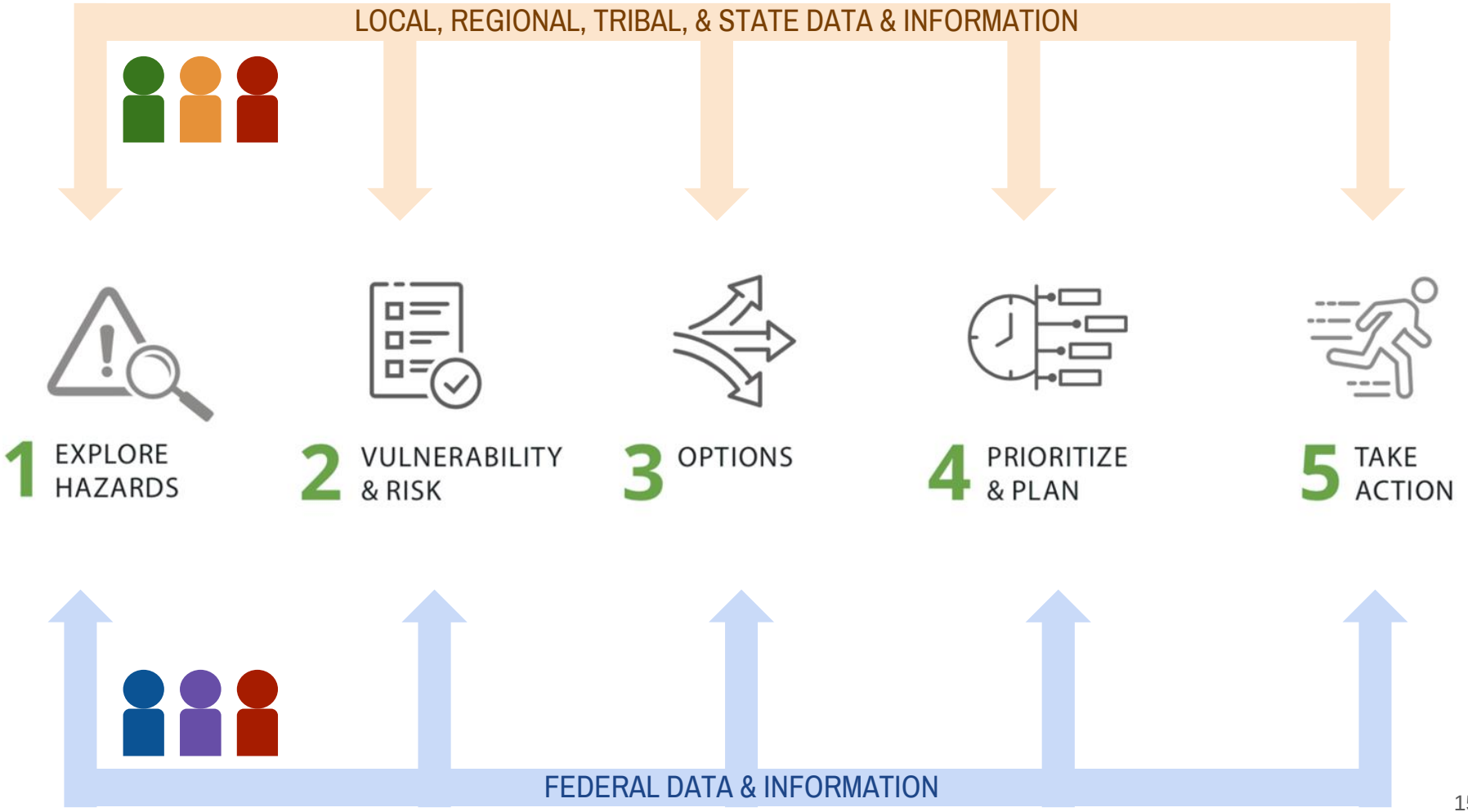


4 PRIORITIZE & PLAN

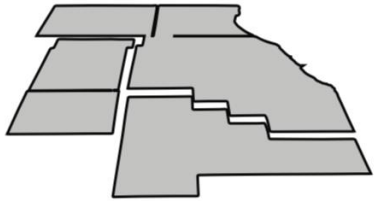
Rank options based on BCR assessment, select options to implement, define success metrics, & make an action plan.

5 TAKE ACTION

Obtain funds, implement plan, monitor results, iterate as needed, & report progress & outcomes.


LOCAL, REGIONAL, TRIBAL, & STATE DATA & INFORMATION
1 EXPLORE HAZARDS
2 VULNERABILITY & RISK
3 OPTIONS
4 PRIORITIZE & PLAN
5 TAKE ACTION
FEDERAL DATA & INFORMATION

Aligning the goals & objectives of decision-makers at all scales, from global to local

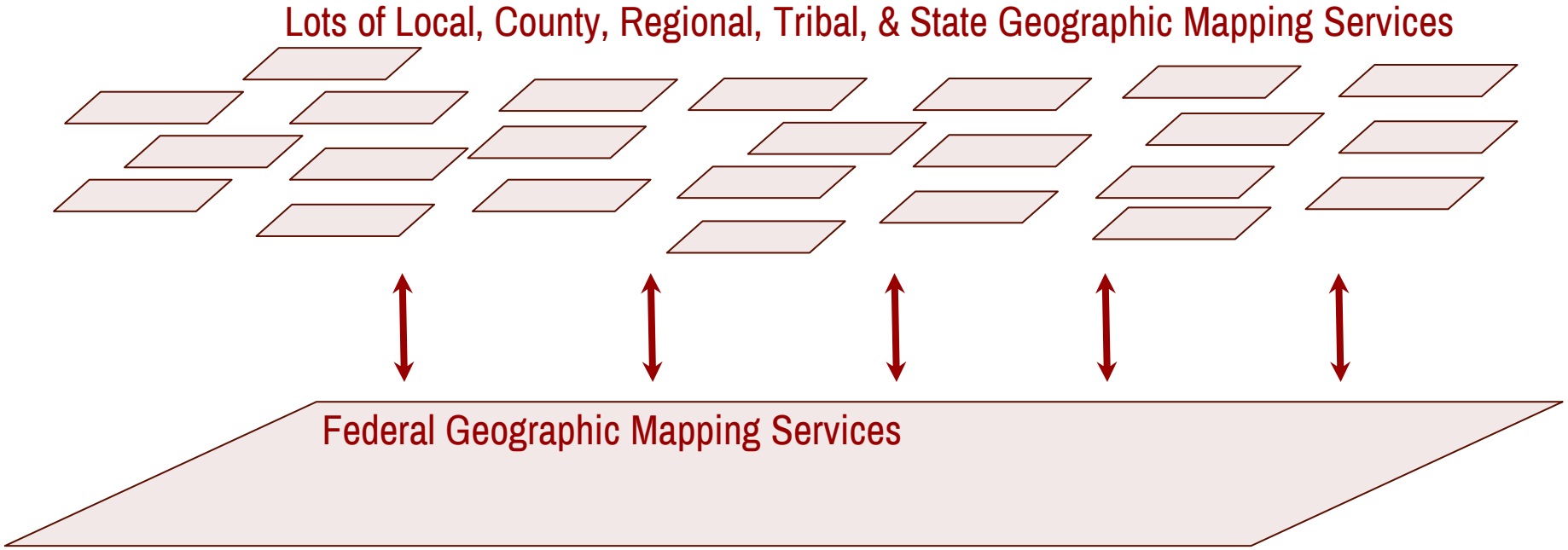


- **MUNICIPAL**
  Citizens & municipal leaders face climate-related hazards. Responsible for reducing vulnerability & risk, enhancing emergency response, & building resilience.

- **REGIONAL / TRIBAL**
  Regional & Tribal government entities focus on political efforts to lead & encourage local action, & enact relevant policies.

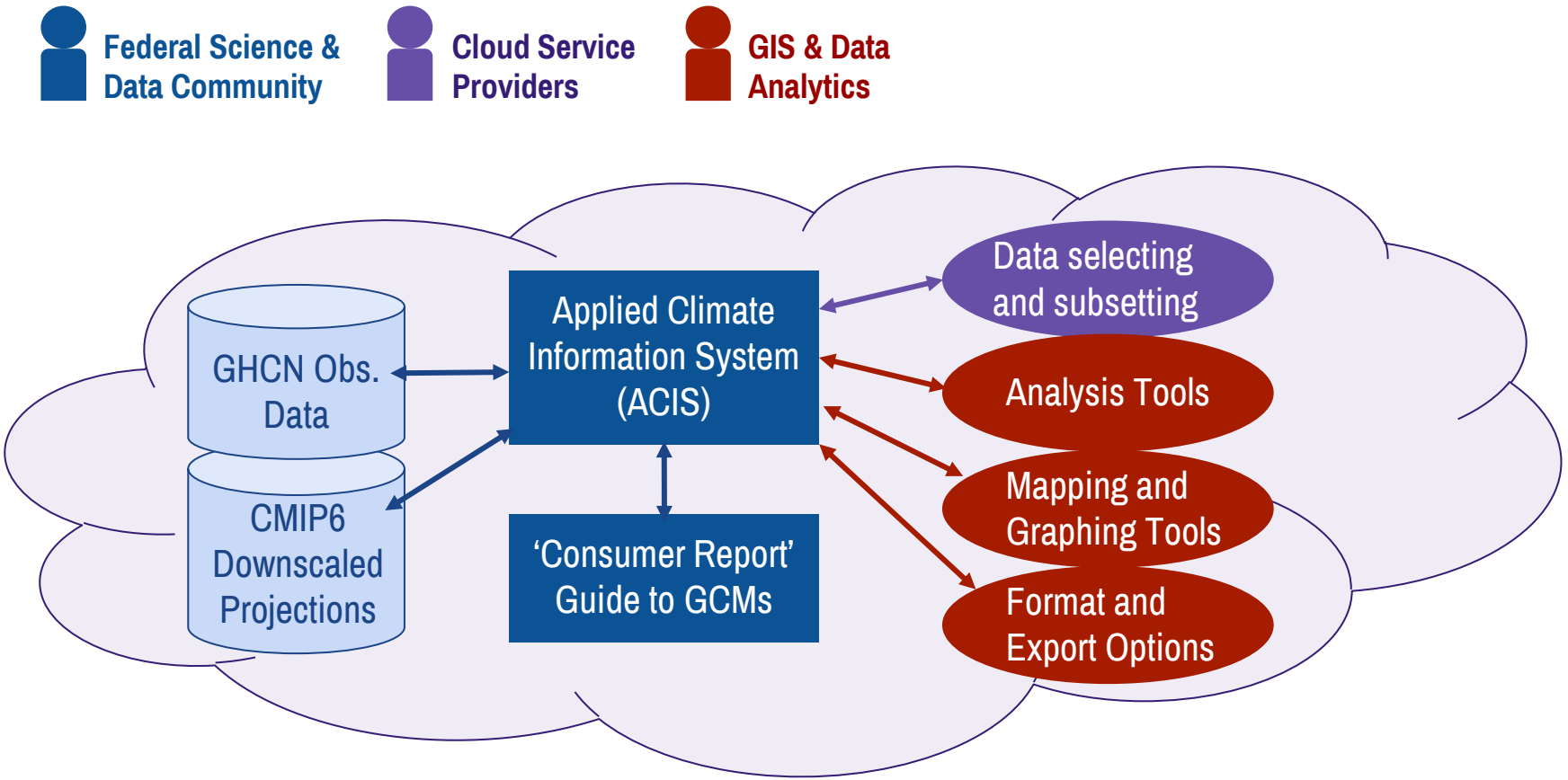
- **STATE**
  State governments can coordinate & support local resilience-building, and can work with state & federal authorities to seek resources & align efforts.

- **NATIONAL / FEDERAL**
  Federal agencies provide science data & assessments, grant funding (FEMA/BRIC), the nation's GeoPlatform, & better coordination.

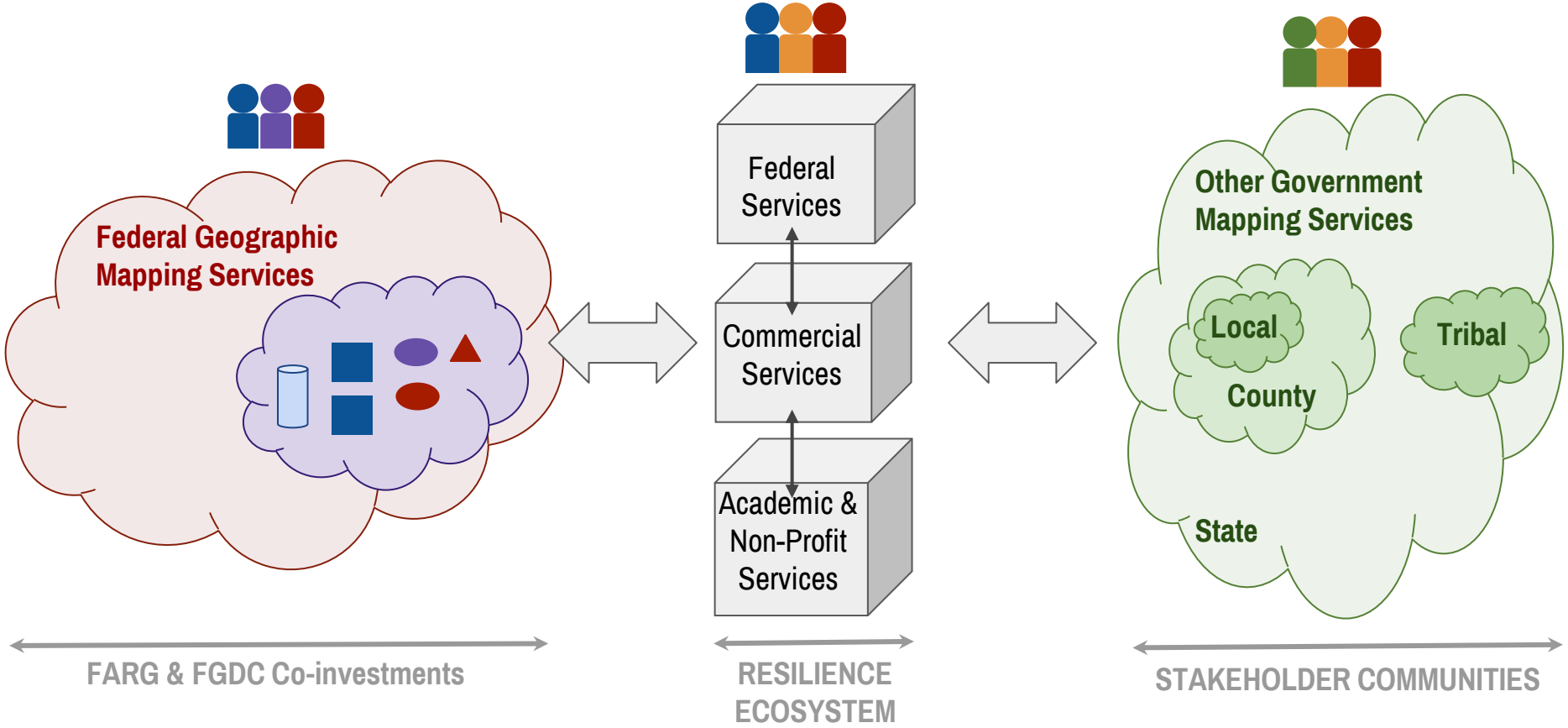

Lots of Local, County, Regional, Tribal, & State Geographic Mapping Services
Federal Geographic Mapping Services

Draft concept for sharing climate projections

Climate projections (CMIP6) in the Cloud



Vision for open-access, interoperable geographic mapping services



A Case for Collaboration and Co-Investment

EO on Tackling the Climate Crisis at Home & Abroad

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May all your problems be technical in nature.

— IT Manager's Proverb

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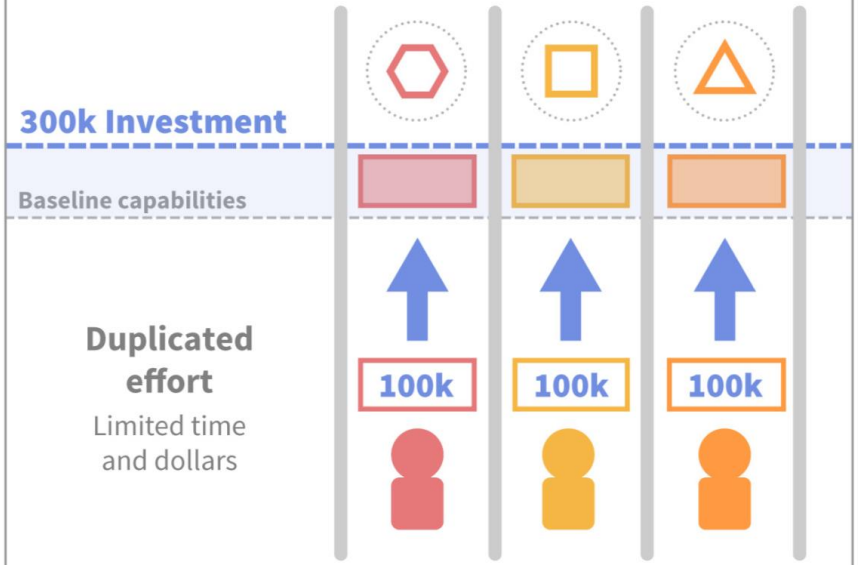
Humans have strong incentives to work in competitive "silos"...

- Recognition & credit
- Branding & positioning
- Limited funding / pursuit of more funding
- Different mission priorities
- Limited time & bandwidth

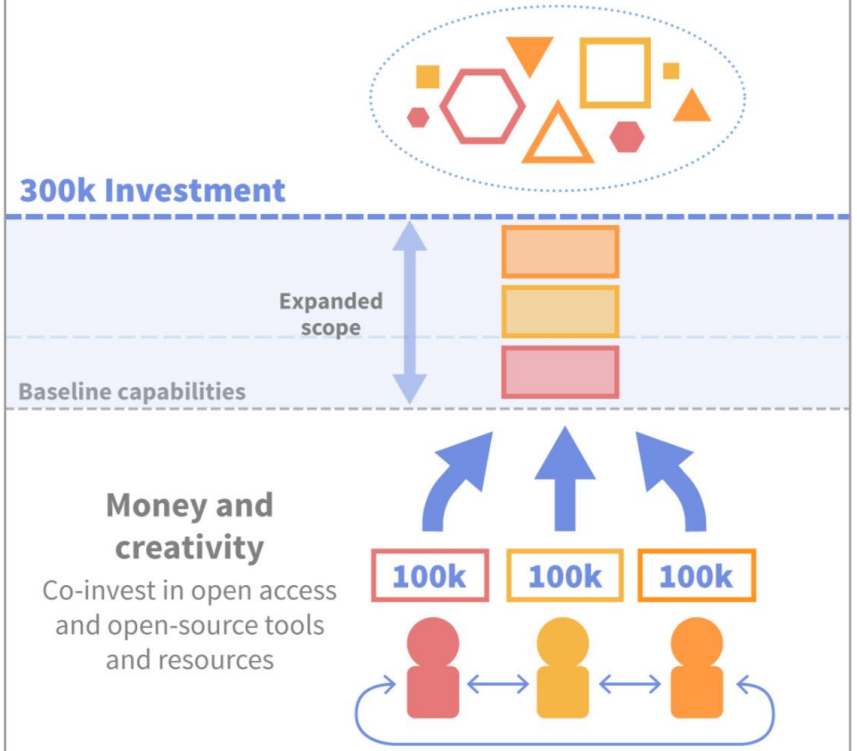
Typical Competitive and Siloed Context



Duplicated effort

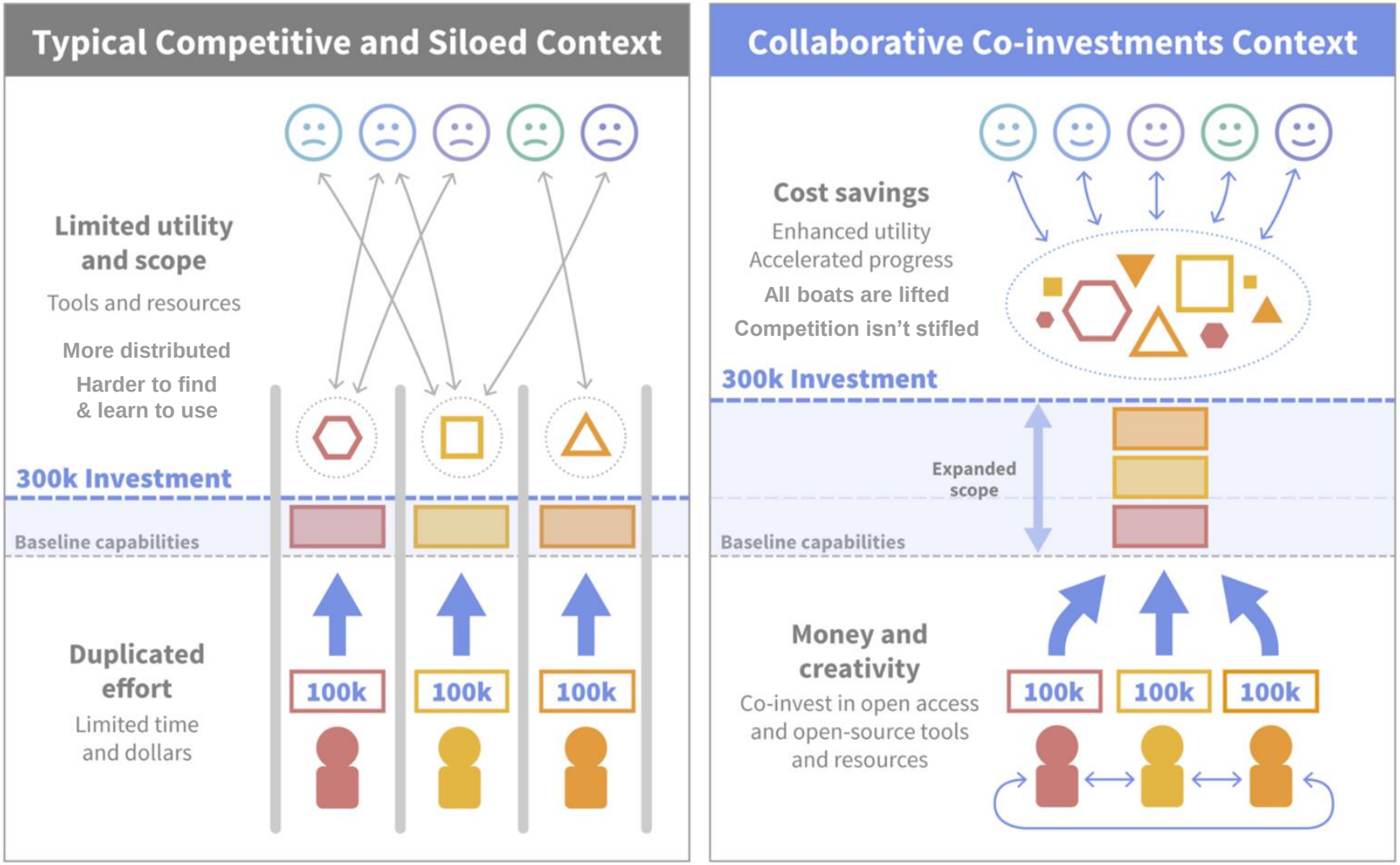
Limited time and dollars

Collaborative Co-investments Context

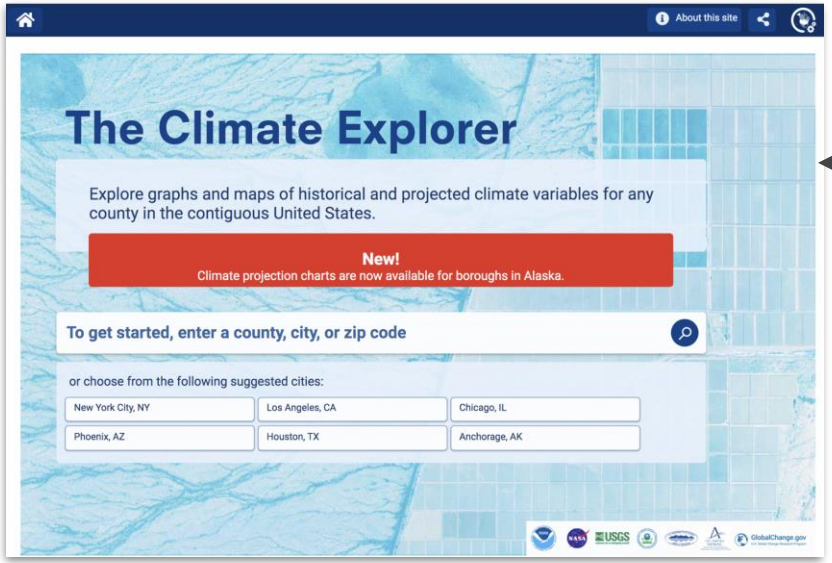


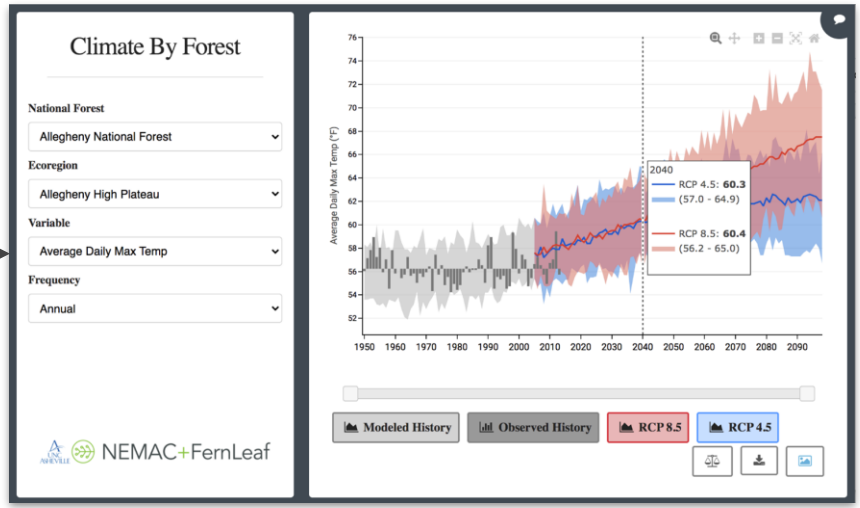
Money and creativity

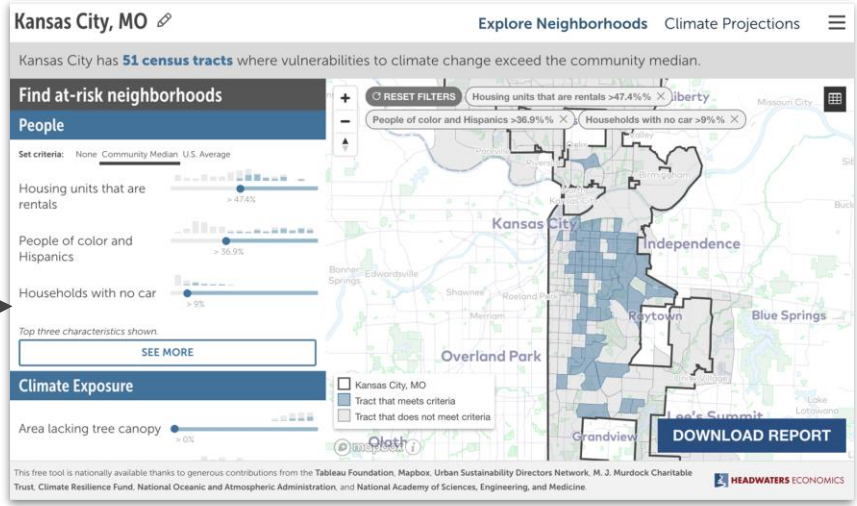
Co-invest in open access and open-source tools and resources


Typical Competitive and Siloed Context
Limited utility and scope
Tools and resources
More distributed
Harder to find & learn to use
300k Investment
Baseline capabilities
Duplicated effort
Limited time and dollars
100k
100k
100k
Collaborative Co-investments Context
Cost savings
Enhanced utility
Accelerated progress
All boats are lifted
Competition isn't stifled
300k Investment
Expanded scope
Baseline capabilities
Money and creativity
Co-invest in open access and open-source tools and resources
100k
100k
100k

Some RE examples...



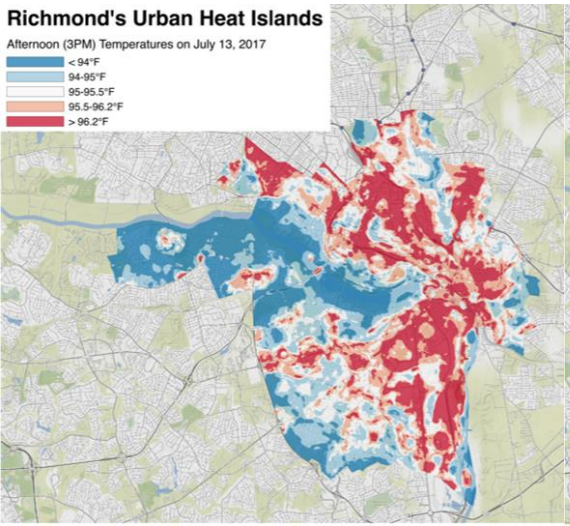


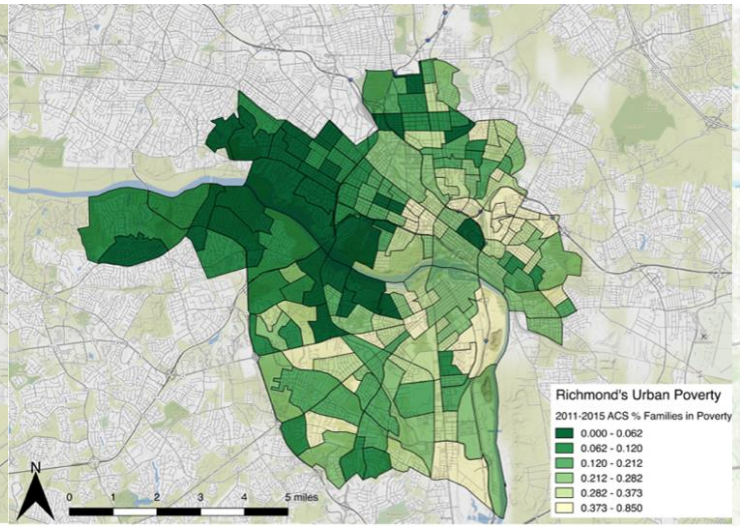


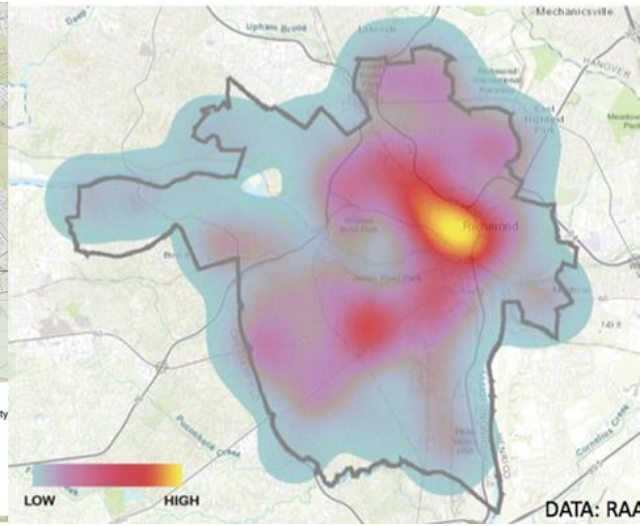
ACIS Applied Climate Information System

NOAA Regional Climate Centers (RCCs)

Richmond, VA

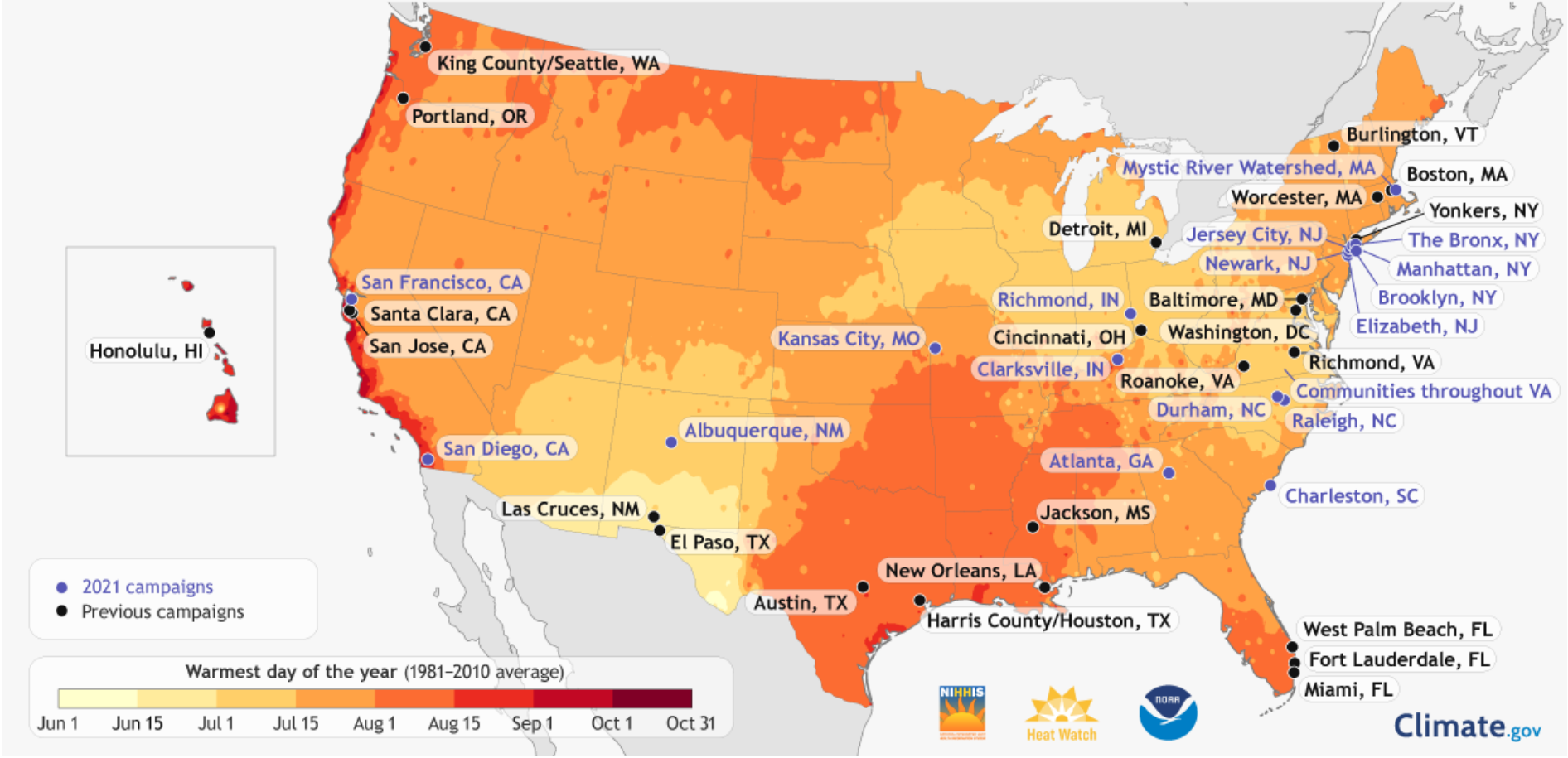

Richmond's Urban Heat Islands
Afternoon (3PM) Temperatures on July 13, 2017
< 94°F
94-95°F
95-95.5°F
95.5-96.2°F
> 96.2°F


Richmond's Urban Poverty
2011-2015 ACS % Families in Poverty
0.000 - 0.062
0.062 - 0.120
0.120 - 0.212
0.212 - 0.282
0.282 - 0.373
0.373 - 0.850
N
0 1 2 3 4 5 miles


Mechanicsville
Richmond
LOW
HIGH
DATA: RAA

Questions?

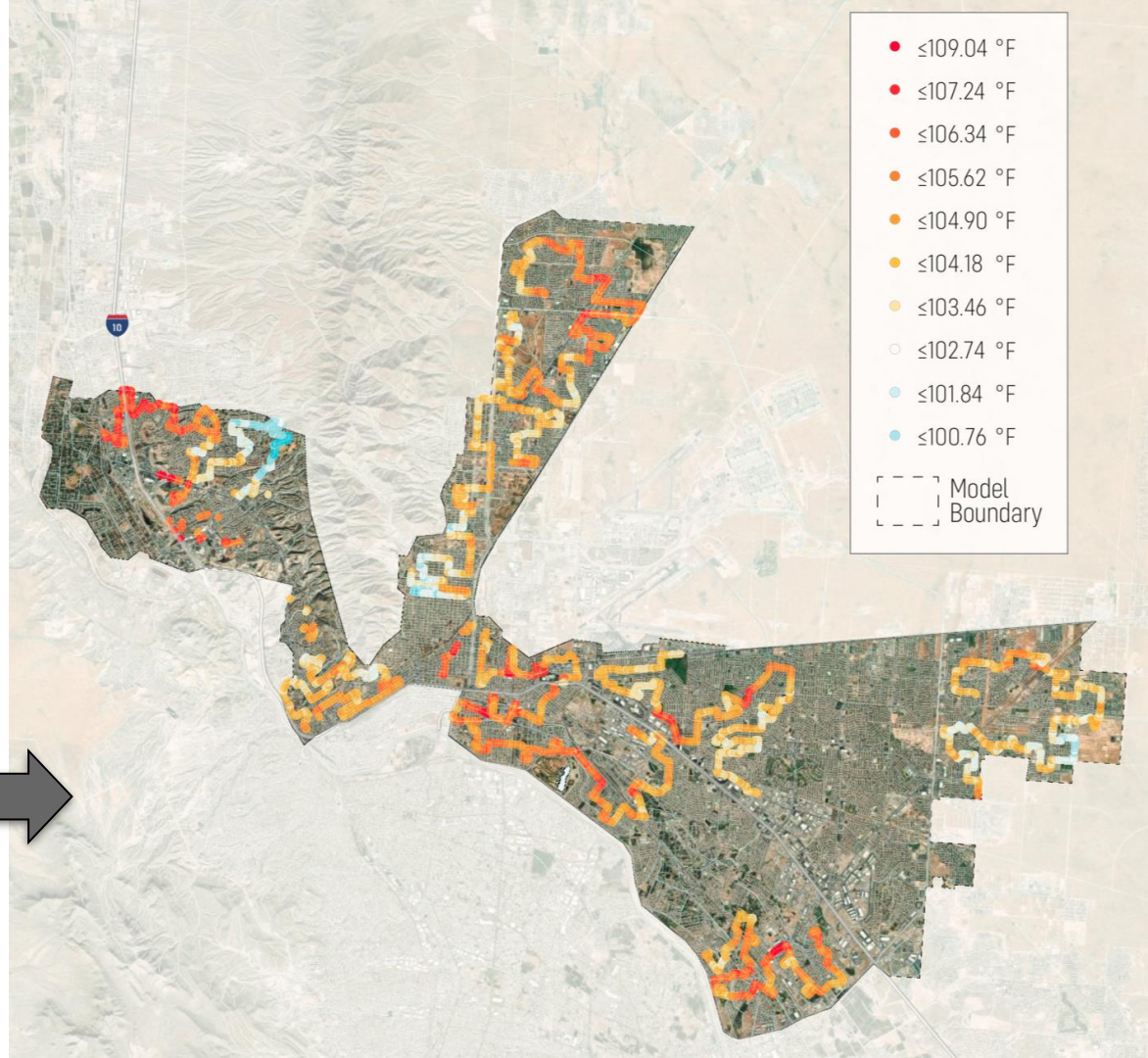
NOAA Urban Heat Island Mapping Campaigns: All Locations, 2017-2021



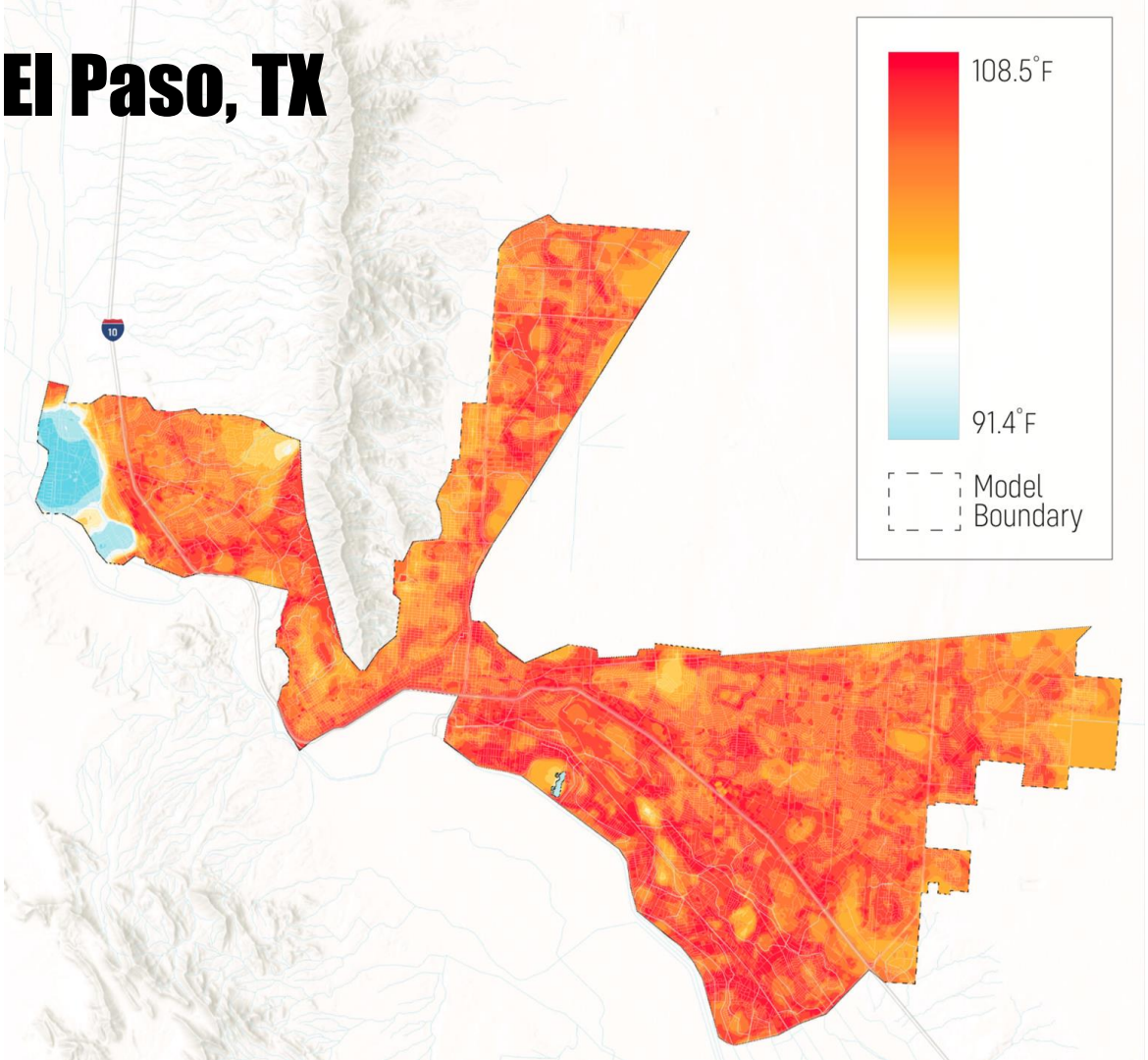
El Paso, TX

El Paso, TX


SCIENCE IN MOTION
HEAT WATCH


≤109.04 °F
≤107.24 °F
≤106.34 °F
≤105.62 °F
≤104.90 °F
≤104.18 °F
≤103.46 °F
≤102.74 °F
≤101.84 °F
≤100.76 °F
Model Boundary
10

El Paso, TX



41
Volunteers

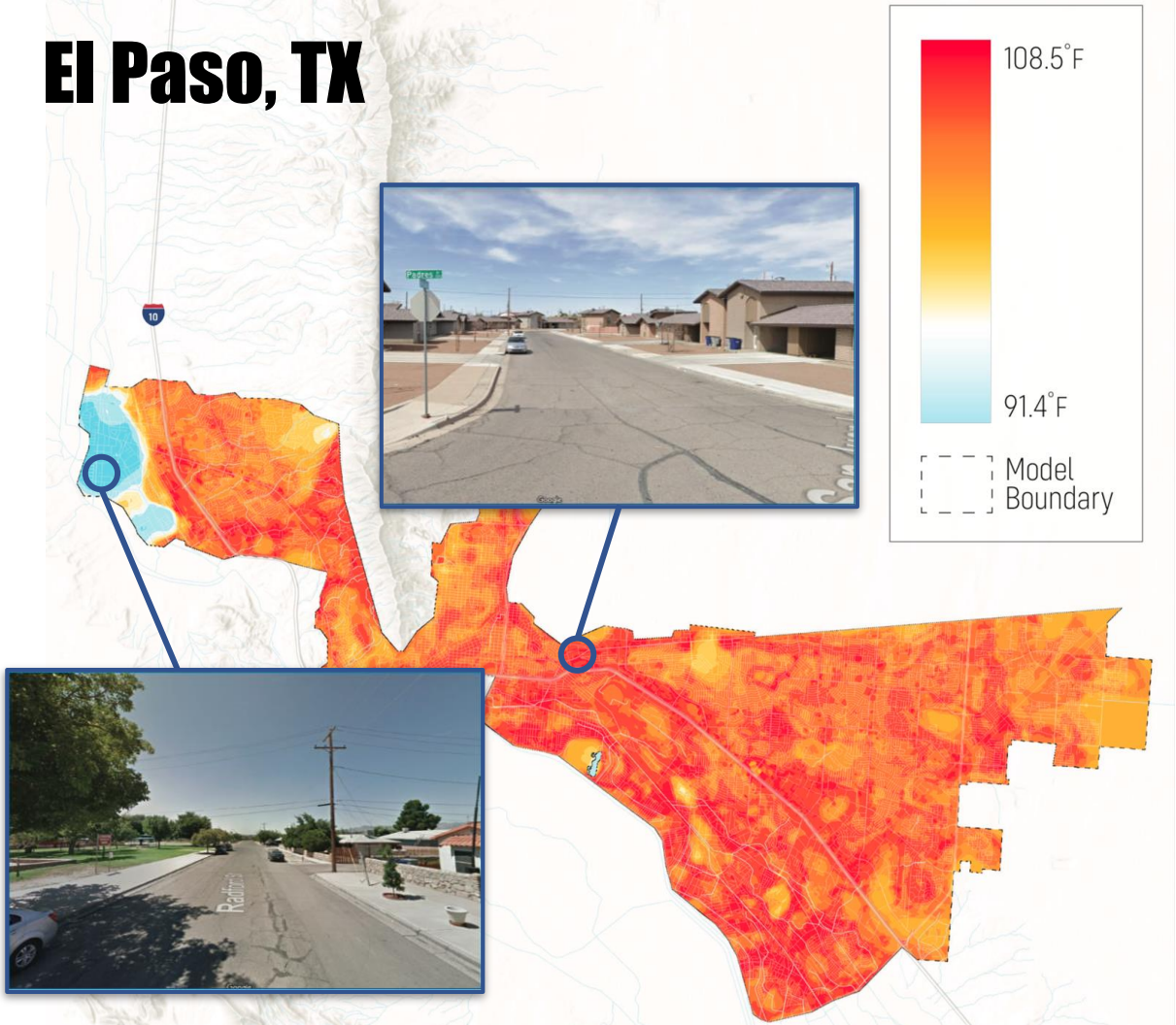
12
Study Areas

66,419
Measurements

109.04°
Max Temperature

17.5°
Temperature Differential

El Paso, TX



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